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How Do Parent-Child Interactions Predict and Maintain Depression in Childhood and Adolescence? A Critical Review of the Literature

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ABSTRACT

Background and Objective: Negative parent-child interaction patterns have been linked to youth depression, with a causal influence being assumed. However, the majority of empirical studies examining this issue have used self-report methods to assess parent-child relationships, which cannot capture the temporal dynamics of dyadic interactions and may be subject to reporting bias. This review considers the association between parent-child interactions and youth depression with a specific focus on observational methodology.

Method: A literature search was conducted including studies that investigated the association between observed parent-child interactions and youth depressive symptomology. Literature was obtained using database searches, citation searches and screening of recent reviews.

Results and Conclusion: Maternal disengagement, reduced adolescent autonomy granting, adolescent maladaptive emotion regulation, parental suppression of adolescent positivity and incongruent parent-child communication styles were relatively consistently related to youth depression. Nonetheless, there were conflicting findings and several studies demonstrated little or no contribution of parent-child interaction factors to youth depression. Overall, the evidence suggests that causal influences are likely to be modest. The majority of studies relate to maternal versus paternal interactions. Furthermore, the factors that mediate the association between parent-child interactions and youth depression remain largely unknown. Implications for future research and clinical practice are discussed.

Keywords: Parent-child interactions, observations, depression, childhood, adolescence

INTRODUCTION

Major depression is the most common psychological problem for young people, with approximately 10% of children and adolescents meeting the criteria for a depressive disorder (Costello, Erkanli & Angold, 2006). Experiencing a first episode of depression in early life is associated with many psychosocial difficulties in adulthood, such as unemployment, substance misuse, and other psychiatric disorders (Fergusson & Woodward, 2002; Lewinsohn, Rohde, Seeley, Klein & Gotlib, 2003). This makes depression an important target for clinical intervention in order to prevent pervasive and enduring negative outcomes later in life. Elucidating the specific mechanisms by which depression in young people is precipitated and maintained is also crucial to improving existing clinical interventions, which currently yield modest effect sizes (Weisz, McCarty & Valeri, 2006).

Over the last decade there has been increased interest in the role of family interactions in the onset and maintenance of depression in childhood and adolescence (MacPhee & Andrews, 2006; Restifo & Bögels, 2009; Sander & McCarty, 2005; Stice, Ragan & Randall, 2004; Yap, Pilkington, Ryan & Jorm, 2014). The importance of the parent-child relationship in the development of youth depression has been implicated in several theoretical models (e.g. Beck, 1967; Bowlby, 1980). For example, Beck's cognitive theory of depression assumes a major contribution of early life experiences to the development of depressogenic schemas (Beck, 1967). Despite the longstanding hypothesis that family factors play a large role in child psychological wellbeing, to date the relative contribution of parental factors to child and adolescent depression has found to be small and evidence is mixed. For example, one meta-analysis concluded that although parental factors are associated with childhood depression, the

amount of variance explained was relatively low (McLeod, Weisz & Wood, 2007). Similarly, a second meta-analysis found little or no association between parenting style (authoritarian, authoritative, permissive) and depression in childhood and adolescence (Yap, *et al.* 2014). However, many studies that contributed to meta-analytic reviews in the field utilised parent and child self-report measures of family functioning and relationships. This is problematic for several reasons. First, subjective reporting of the quality of parent-child relationships may be negatively biased due to presence of depressed mood in both parents and young people. Second, parent and child reports are known to differ and parents may give a more positive account of their parenting than their children, possibly due to social desirability (Sheeber, Hops & Davis, 2001). Third, the reciprocal influences of parent and child behaviour are difficult to capture using self-report methods and it can be difficult to establish which parent-child interactive sequences predispose or maintain depressive affect and behaviour.

One way to overcome these potential problems is to use observational methodology for capturing parent-child interactive behaviour. Observational methods are seen as the gold standard in developmental behaviour research, as they can access temporal dynamics and non-verbal communications, providing richer accounts of family processes (Zeman, Klimes-Dougan, Cassano & Adrian, 2007). Furthermore, a larger contribution of parental factors to youth depression has been demonstrated in observational studies compared with studies using self-report methods (McLeod *et al.* 2007), suggesting that they are also more sensitive to detect the aspects of parent-child relationships that are relevant to depression. Several existing depression reviews have broadly covered or included family factors (McLeod *et al.* 2007; Restifo & Bögels, 2009; Sander & McCarty, 2005; Schwartz, Sheeber, Dudgeon & Allen, 2012; Yap *et al.* 2014). By contrast, the aim of the current review is to provide a specific focus on how *observed* aspects

of parent-child interactions are associated with the development and maintenance of depression, and the processes by which they may contribute to the disorder.

METHOD

Data Sources

A search of the literature was conducted between January 2013 and March 2015 and only peer-reviewed published studies were included. The search was initially conducted through electronic databases (PubMed, PsychInfo) to obtain key articles using search terms such as (parent* OR parent-child OR family OR mother-child relations OR parent-child relations) AND (depressi* OR dysthym* OR internalis*) AND (adolescent OR youth OR child) AND (interact* OR observ*). Relevant papers were selected and the reference lists of these articles, as well as other relevant reviews of the literature were screened to identify additional papers missed by the database search. Additional articles were retrieved by reviewing citation searches of key journal articles found on Google Scholar.

Inclusion Criteria

Studies were included in the analysis if they met the following criteria: a) observational methodology was used to measure interaction between children/adolescents and their parent(s); b) the sample included children and adolescents aged between 0 and 18 years old; c) child and/or adolescent depressive status or symptomology were measured as an outcome using standardised tools; and d) associations between parent-child interaction and child/adolescent depression were statistically examined.

RESULTS

The search method yielded a total of 37 peer reviewed journal articles and these studies are summarised in Table 1. It was found that 18 studies used a between-subjects design to compare parent-child interactions of children or adolescents who met the criteria for major depression, with young people who had alternative psychiatric diagnoses (e.g. schizophrenia or conduct disorder) or healthy controls. The remaining 19 studies investigated the relationship between various aspects of parent-child interactions and self-reported, parent-reported or teacher-reported child or adolescent depressive symptoms. Of these correlational studies, it was found that 8 used a cross-sectional design and 11 used a longitudinal design.

<INSERT TABLE 1 HERE>

The ages of participants ranged from 12 months to 18 years of age, but the majority of studies investigated depression in late childhood and across adolescence (between 8 and 18 years). The most commonly utilised method for assessing interactions was observing parents and children discussing topics of conflict or planning a positive event. Affective and behavioural displays were identified using objective coding schemes and analysed in terms of frequency and duration. We categorised and summarised studies according to whether they focused particularly on parental or child behaviour and the *type* of parenting behaviour observed, with some studies contributing to more than one section.

Parental Behaviour

Parental criticism and aggression. The role of aversive parental behaviour in the development and maintenance of youth depression has been the focus of several observational

studies (Restifo & Bögels, 2009). It is hypothesised that parental aggression and criticism may contribute to child depression by modelling negative interpersonal communication, evoking submissive responses and eliciting feelings of rejection in the young person (Eisenberg, Cumberland & Spinrad, 1998; Keltner & Kring, 1998). However, studies exploring the relationship between observed parental critical and aggressive behaviour during parent-child interactions and youth depression have found mixed results. In terms of research employing a correlational design, Yap and colleagues, in a study of 163 youth (starting age range 11-13 years) found that a higher frequency of parental aggressive and aversive behaviour (defined as being angry, disapproving and argumentative) during a positive event planning task predicted the amount of adolescent self-reported depressive symptoms both cross-sectionally (Yap, Schwartz, Byrne, Simmons & Allen, 2010) and longitudinally. In follow-up assessments with the same sample two years later this effect was replicated, even when controlling for baseline depressive symptoms (Schwartz, Dudgeon, Sheeber, Simmons & Allen, 2011; Schwartz, Dudgeon, Sheeber, Yap, Simmons & Allen, 2012). This suggests that parental behaviour is not merely a response to ongoing youth depression.

In contrast, other studies have failed to find a direct association between parental critical or aversive behaviour during conflict resolution or problem-solving tasks and adolescent depressive symptoms either cross-sectionally (Corona, Lefkowitz, Sigman & Romo, 2005; Tompson, Langer & Davilla, 2012) or over time, after controlling for initial baseline depressive symptoms (Burge & Hammen, 1991; Gaté, Watkins, Simmons, Byrne, Schwartz, Whittle, ... Allen, 2013; Sagrestano, Paikoff, Holmbeck & Fendrich, 2003). One longitudinal study also demonstrated that higher maternal anger during a conflict task predicted *fewer* adolescent internalising symptoms two years later (Hofer, Eisenberg, Spinrad, Morris, Gershoff, Valiente ...

& Eggum, 2013), suggesting that maternal expression of negative emotion was adaptive for future wellbeing. Within study age ranges were relatively broad and varied substantially across samples, which may have made effects more difficult to detect. Nonetheless, samples were generally well powered, with the largest of these studies having an initial sample size of 275 adolescents (Sagrestano *et al.* 2003).

There has also been inconsistency in studies that examined differences in amount of parental aversive behaviour between depressed and non-depressed children and adolescents. For example, Sheeber and colleagues in their case-control study of 243 adolescents reported that those with clinical depression experienced a greater frequency of maternal aversive behaviour during a problem-solving task than those with sub-diagnostic symptoms or no symptoms (Sheeber, Davis, Leve, Hops & Tildesley, 2007). Similarly, Dadds and colleagues found that mothers of depressed adolescents showed more aversive parenting behaviour than control group mothers during a naturalistic home interaction. Moreover, this aversive behaviour was seen to be directed to all siblings, suggesting it was a maternal trait (Dadds, Sanders, Morrisson & Rebgetz, 1992). The same study did not find a between-group difference in paternal behaviour. However, the sample size was small and results should be treated cautiously. Other studies have shown comparable amounts of parental aggressive and critical behaviour during problem-solving interactions for depressed children and adolescents and healthy controls (Hamilton, Asarnow & Tompson, 1999; Sanders, Dadds, Johnston & Cash, 1992), including one large scale study which included 86 depressed adolescents and 408 controls (Sheeber & Sorensen, 1998). Finally, two studies have investigated the contribution of adolescent response to negative parental behaviour. It has been reported that female adolescents who responded to their mother's aversive behaviour with aggression during an observed problem-solving task reported more concurrent depressive

symptoms, although this reciprocal effect was not observed for boys (Yap, Allen, O'Shea, Di Parsia, Simmons & Sheeber, 2011; Yap *et al.* 2010). However, the cross-sectional method makes it difficult to ascertain whether presence of symptoms increased the level of aggressive responses.

In sum, there is considerable inconsistency in the evidence for the association between aggressive or critical parental behaviour and depression. Effects of aversive parental behaviour seemed to emerge more reliably during positive rather than negative tasks, possibly due to the fact that aversive behaviour during conflict resolution tasks may be expected, rather than representing a dysfunctional process. Discrepant findings between the studies may be explained by the fact that several different definitions of parental behaviour were used, including aggression, criticism and aversiveness, making it difficult to define exactly which aspects of the parental behaviour were most relevant. Nonetheless, the studies reviewed included some relatively large samples, and if effects of parental criticism were strong a more consistent pattern of findings in these larger studies would be expected. The limited longitudinal evidence demonstrating that parental behaviour predicts future depression is problematic, as aversive parental behaviour could represent a reaction to young people's depressive symptoms rather than a contributing or maintaining factor. Further investigations into the processes that may mediate the association between aversive parental behaviour and depression are required.

Parental reciprocity of anger. Parent-child conflict is typical during adolescence, as new roles and responsibilities are negotiated. However, high amounts of conflict during problem-solving tasks are likely to impair resolution of difficulties, limiting opportunities for the young person to learn negotiation skills (Gotlib & Hammen, 1992). A study following the same

participants in the aforementioned studies by Yap and others, also found that adolescent girls were at increased risk for depression around two and a half years later when their mothers reciprocated their angry affect during a positive event planning task (Schwartz *et al.* 2011), although they did not follow up whether adolescent responses to maternal aggression predicted depression over time. Furthermore, when the same participants were followed up six years later, they found that observed maternal reciprocation of adolescent aggressive behaviour during the event planning task was predictive of the onset of female depression (Schwartz, Byrne, Simmons, Whittle, Dudgeon, Yap ... Allen, 2014). However, the opposite effect was found for boys, as *reduced* maternal aggression in response to boys' aggression during the task was predictive of depression over the course of six years. In contrast, a separate case-comparison study comparing mother-adolescent interactions of depressed adolescents and healthy controls failed to find a between-group difference in the amount of mother's reciprocation of adolescent aggression over the course of a problem-solving interaction (Sheeber, Allen, Davis & Sorensen, 2000).

These findings demonstrate emerging evidence that maternal reciprocation of anger increases the risk of female adolescent depression, possibly due to girls being more sensitive to the effects of maternal inability to modulate negative affect. However, there is no evidence to suggest that parent-child reciprocation of anger differs between clinical groups and healthy controls. At present, the body of work investigating this pattern is small and so further longitudinal studies and case-comparison studies are required.

Maternal disengagement. Disengagement during an interaction is characterised by a lack of affection, little emotional responsiveness and reduced attempted communication (Shaw,

Schonberg, Sherrill, Huffman, Lukon, Obrosky & Kovacs, 2006). Parental disengagement may signal to the young person that they are not valued by their parent and/or parent is unavailable for emotional support, possibly leading to negative beliefs about the self and others. There is some evidence to suggest that more maternal disengagement during parent-child conflict is associated with depression over time. Jacobvitz, Hazen, Curran and Hitchens (2004) investigated the role of maternal behaviour during a naturalistic observation, where mothers provided caregiving to their children aged 24 months ($n = 108$). Greater maternal disengagement, defined as being emotionally distant and not making room for feelings during the task, was associated with teacher-rated but not maternal-rated child depressive symptoms over five years later. Similarly, Burge and Hammen (1991) in their longitudinal study of 8-16 year olds ($n = 57$) found that lower maternal task involvement observed during a problem-solving task was also associated with higher levels of adolescent depressive symptoms six months later, although this was not over and above baseline depressive symptoms. A third longitudinal study found that more maternal disengagement during an interaction task, defined as low support, responsiveness and communication, was significantly associated with female but not male child and adolescent (ages 9-20 years, $n = 406$) depressive symptoms four years later (Ge, Lorenz, Conger, Elder & Simons, 1994). However, initial baseline symptoms were not controlled for.

Consistent with these correlational findings, evidence of a between-group difference for those with and without depression in amount of maternal disengagement has also been identified. Dietz and colleagues (2008), in a 21-year longitudinal programme of research, reported that mothers of children 8-17 years old who were depressed or were at high risk of depression (at least one first degree and at least one second degree relative with a history of depression) demonstrated more disengagement during a problem-solving task than mothers of control

children. Furthermore, they found that mothers of depressed children continued to show high levels of task disengagement regardless of child remission status, suggesting that maternal disengagement was a stable characteristic of the parent-child relationship. Unfortunately, due to a small sample size, particularly for the high risk group ($n = 28$), they were unable to make any conclusions about whether disengagement predicted child depressive status.

In conclusion, these studies, some of which employed large sample sizes, show relatively consistent support for the association between maternal disengagement and depressive symptoms over time. However, as longitudinal studies did not typically control for baseline levels of depression, it remains possible that maternal disengagement is a reaction to young people's depression, may maintain depression after the onset of symptoms, or may not be causally related to depression. The observation that parental disengagement was a stable characteristic of the parent-child relationship which did not change after young people are in remission tends to suggest that it is not simply a response to child difficulties. Nonetheless, maternal disengagement may be attributed to potential confounding factors such as maternal mood or depressive status. Further studies accounting for these variables are required.

Parental dysphoria and low positivity. Low parental positivity and dysphoria directed towards young people during observed interactions have been studied in relation to adolescent depression. Expression of parental dysphoria may model a way of coping with difficult interpersonal interactions and serve to discourage young people's expressions of positivity within parent-child interactions (Yap, Allen & Ladouceur, 2008). Negative parental responses to young people's positive affect during parent-child interactions is likely to reinforce the suppression of positive emotions in the parent-child dyad. Furthermore, recent studies have

shown that low maternal warmth is associated with reduced adolescent response to reward (Morgan, Shaw & Forbes, 2014), which is a clear risk factor for depression. A relatively small number of studies were identified which examined the association between low parental positivity and adolescent depression, but findings were fairly consistent. Pineda and colleagues (Pineda, Cole & Bruce, 2007) compared adolescents with and without high levels of depressive symptoms and found lower levels of parental positivity during a conflict resolution task to be associated with adolescent depressive symptomology. Messer and Gross (1995) looked at interactions between parents and their children, where half had high depressive symptomology and half had low depressive symptomology. Parents of children with high depressive symptoms were shown to reciprocate child positive emotion at comparable rates to parents of children with few symptoms, but the frequency of overall positive parental behaviour was less for parents of children with depressive symptoms. The sample size in this study was very small ($n=20$) so findings should be interpreted with caution. In another study, low levels of maternal positivity were found to be prospectively associated with increased youth internalising symptoms one year later, although baseline adolescent symptoms were not assessed (Hofer *et al.* 2013).

The concept of dysphoria may differ from that of low positivity, as it is measured based on active behaviour, such as whining and complaints, rather than an absence of positive behaviour. One study exploring the mother-child interactions of young adolescents found that maternal dysphoria in response to adolescent positive affect during event planning and problem-solving tasks was associated with more concurrent adolescent depressive symptoms (Yap *et al.* 2008). However, two studies have failed to show a relationship between parental responses to child positivity and depression. Firstly, a study that observed parent-child interactions with both children and adolescents did not find a significant association between the amount of parental

reciprocal positivity during problem-solving tasks and child or adolescent depression (Jacob & Johnson, 2001). Schwartz and colleagues (2012) also did not find any association between parental dysphoria, which included self-derogatory comments, during positive event planning task and problem-solving tasks, and the onset of adolescent depressive symptomology over two years later. However, when these participants were followed up over the course of 6 years, they found that adolescents whose mothers responded to their positive behaviour with dysphoria during problem-solving-tasks were at increased risk of the onset of depression over time (Schwartz *et al.* 2014). This study also controlled for symptoms of maternal depression, but did not measure baseline adolescent depressive symptoms. These findings suggest that the discouragement of adolescent positivity in parent-child interactions may reinforce behavioural displays of depression.

These findings show some evidence for the role of low levels of parental positivity and dysphoria as a contributing factor to adolescent depression. The limited evidence indicating a relationship between these particular parental responses to child positivity and child depression suggests that parents of depressed children do reciprocate positive affect but on a less frequent basis than parents of children with few symptoms, which may mean that the frequency of opportunities for positive reinforcement may be reduced for young people with depression. There is also some evidence to suggest that negative parental responses to child positivity may be associated with an increased risk of depression over time, accounting for maternal depressive symptoms. Further studies exploring whether repeated suppression of positivity decreases a young person's ability to process reward would also be useful to highlight potential mediators linking positivity suppression and adolescent depression. Again, the absence of longitudinal studies assessing and controlling for baseline symptoms or parental mental health limits the

conclusions that can be drawn about the causality of the relationship between parental behaviour and depression, and it is possible that low positivity is a result rather than a cause of youth depression.

Positive Parental Responses to Depressive Behaviour

The development of depression throughout childhood and adolescence is likely to alter family interactions and may be reinforced by the reaction of others. One theory proposes that adolescent dysphoria can be functional within a conflictual family environment by suppressing parental negativity and criticism (Eisenberg *et al.* 1998). Also, adult interpersonal theories of depression hypothesise that depression initially elicits care-giving behaviour from others but this reduces over time (Coyne, 1976; Hames, Hagan & Joiner, 2013). Sheeber and colleagues found that fathers, but not mothers of clinically depressed adolescents were more likely to decrease aggressive behaviour in response to adolescent depressive behaviour during a problem-solving interaction than fathers of non-depressed adolescents (Sheeber, Hops, Andrews, Alpert & Davis, 1998). Interestingly, this study also found that depressive status over time was not related with parental responses to adolescent behaviour, suggesting that parent-child interactions were a stable factor and not a response to youth depression. Another study also found that rates of maternal smiling were shown to increase as the child self-reported depressive symptoms increased (Dadds *et al.* 1992). Interestingly, in a non-depressed sample of adolescents, when adolescent depressive behaviour decreased, parental aversive behaviour also decreased (Slesnick & Waldron, 1997).

These studies suggest that adolescent displays of dysphoria tend to elicit more positive parenting behaviour and/or may suppress negative parental behaviour, thus negatively reinforcing depressive behaviour. However, in the absence of longitudinal evidence it is not clear whether this parental response is adaptive or unhelpful. It is notable that alongside the evidence that parents naturally reduce negative behaviours in response to adolescent dysphoric behaviours, two studies suggest that this may happen less for the parents of clinically depressed young people. Again, whether this is a process relevant to the development and maintenance of depression or a reaction to more frequent child displays cannot be established from the cross-sectional findings.

Parent-Child Communication Styles

Attuned or sensitive parent-child communication refers to a parent's ability to recognise and respond appropriately to their child's emotional experience and a lack of attunement can result in poorer coping abilities and intolerance of negative affect (Fonagy, Steele, Steele, Moran & Higgitt, 1991). One study examined the verbal and behavioural communication styles of parents of depressed adolescents compared with healthy controls (Slesnick & Waldron, 1997). Results showed that parents of depressed adolescents were more likely to pair verbal aversive content with positive affect behaviours during observed parent-child conflict task than parents of non-depressed adolescents, demonstrating a 'mixed-messages' style of communication. This incongruent communication may be confusing for the young person and may represent attempts to conceal negative feelings towards their child, possibly due to social desirability effects. Another study also found that mothers of depressed children were less contingently responsive to their children during free-play and puzzle completion tasks, compared with mothers of non-

depressed children (Field, Sandberg, Goldstein, Garcia, Vega-Lahr, Porter & Dowling, 1987). In addition, a recent study looked at affective matching between parents and adolescents during a problem solving task (Hollenstein, Allen & Sheeber, 2015). They found that clinically depressed adolescents were quicker to return to discrepant affective states and slower to return to matched affective states with their parents than healthy controls, suggesting some difficulties achieving emotional attunement.

In summary, the limited existing research shows some evidence that parent-child communication may be incongruent and mismatched and that discrepancies exist between parent-child affective states for depressed adolescents, compared with those without depression. However, due to the absence of longitudinal studies, it is unclear as to whether this communication style was present prior to the onset of depression or whether it emerged as a result of depression onset.

Child and Adolescent Behaviour

Emotional regulation. The process of emotional regulation, which involves “initiating, maintaining, and modulating the occurrence, intensity, and expression of emotions” (Morris, Silk, Steinberg, Myers & Robinson, 2007), is likely to be an important factor in how adolescents respond to interactions with their parents, particularly in the context of conflict. Emotional dysregulation during interpersonal difficulties can lead to the development of ineffective conflict resolution strategies, which are associated with internalising difficulties (Eisenberg, Spinrad & Eggum, 2010; Nolen-Hoeksema, Parker & Larson, 1994). The suppression of emotional expression is a core regulatory strategy in models of emotion regulation, and is held to be maladaptive.

Low levels of observed negative affect during conflict have been shown to differentiate depressed individuals from controls. Dadds *et al.* (1992) found that *lower* levels of aversive behaviour of children and young adolescents (7-14 years old) with mixed depression and conduct difficulties ($n = 12$) during an observed family meal was associated with higher adolescent reported depressive symptoms concurrently. However, this effect was not found for adolescents with depression only ($n=12$). In addition, a second study using the same sample found that depressed young people showed relatively low levels of anger during a problem-solving task with their parents compared to controls (Sanders *et al.* 1992). This may suggest either the increased use of emotional suppression during conflict or a genuine absence of negative affect. However, the small sample size means that these observations should be treated cautiously.

In contrast to these findings, several well-powered studies have found that depressed adolescents express more negative affect during parent-child interactions. For example, when compared with healthy controls, depressed adolescents have been shown to demonstrate increases in dysphoria across the course of a parent-child conflict task (Sheeber, Kuppens, Shortt, Katz, Davis & Allen, 2012), as well as maintaining depressive and aggressive behaviours for longer durations (Sheeber *et al.* 2000) and showing longer durations and higher frequencies of anger and dysphoria during conflict (Sheeber, Allen, Leve, Davis, Shortt & Katz, 2009). In addition, Kuppens and colleagues have focussed on the inflexible use of emotional regulation strategies by measuring the amount of ‘emotional inertia’ during parent-child interactions, defined as the presence of a stable emotional state that does not change readily (Kuppens, Sheeber, Yap, Whittle, Simmons & Allen, 2012). The first case-comparison study found that depressed adolescents showed a greater degree of emotional inertia for positive and negative behavioural displays over the course of parent-child conflict, compared with healthy controls

(Kuppens, Allen & Sheeber, 2010). A further longitudinal study (n=165) found that high adolescent emotional inertia was predictive of the first episode of clinical depression two and a half years later in an independent sample of non-depressed adolescents (Kuppens, Sheeber, Yap, Whittle, Simmons & Allen, 2012). This result still remained when controlling for parent behaviour, age, gender and number of depressive symptoms, which may show that an inability to modulate affect in response to the interpersonal context is a risk factor for the development of depression. Together these studies suggest that showing more emotion or the inflexible use of emotion regulation in interactions with parents, possibly due to fewer adaptive emotional management strategies, is associated with depression.

One explanation for the discrepancy in findings on the association between the degree of emotional expression and depression, is that young people may be able to express their emotions more readily in low conflict, rather than high conflict environments. Jackson, Kuppens, Sheeber and Allen (2011), found that depressed adolescents whose families displayed low parental anger exhibited a greater degree of angry behaviour during parent-child conflict than non-depressed adolescents. However, there were no differences in anger expression for depressed adolescents compared to healthy controls from a high anger family. Therefore, depressed adolescents from families characterised by high anger and conflict may not feel they can express their negative emotions and avoid escalating negative affect by suppressing feelings. However, none of the reported studies looking at child and adolescent expressions of affect across the interactions assessed whether reductions in reported negative affect represented greater efforts to control negative emotions or whether young people did not experience conflict with their parents as distressing.

Only one study has explicitly measured adolescents' use of maladaptive emotional regulation strategies during parent-child conflict. Adolescents' use of maladaptive emotion regulation strategies, such as engaging in conflict to solve interpersonal problems and mirroring parental dysphoria, mediated the association between the frequency of aversive maternal behaviour during a positive parent-child task and depressive symptoms concurrently (Yap *et al.* 2010). It is possible that negative parental behaviour may increase adolescent negative affect, in turn activating maladaptive emotional regulation strategies to manage these feelings.

Collectively, these studies show evidence for the use of both low and high emotional expression during parent-child interactions in young people with depression, compared with healthy controls. This could mean that maladaptive emotional responding may be a maintaining factor or response to depressive symptoms. Also, one study demonstrated emotional inertia as a predictive factor for the onset of depression, suggesting that low levels of emotional flexibility during parent-child conflict could be indicative of a predisposing factor for depression. However, only two studies included the use of specific emotional regulation strategies as mediator variables meaning that further studies examining the underlying processes are required. It is also unclear whether the emotional regulation abilities of young people with depression are likely to be reduced due to low mood or whether maladaptive coping strategies were a pre-morbid characteristic for those with depression.

Reduced autonomy. Establishing autonomy and independence, whilst maintaining closeness with parents is one of the central tasks of adolescence (Eisenberg *et al.* 1998). Young people who are not granted an appropriate amount of autonomy in relation to decision-making may be vulnerable to depression, due to assuming a passive role in relationships where their own

wishes and opinions are not expressed (Hare, Szewedo, Schad & Allen, 2014). It has been found that a lower amount of autonomy during parent-child interactions, such as low levels of adolescent independence and responsibility, predicted higher adolescent rated concurrent depressive symptoms (Lewandowski & Palermo, 2009). It has also been found that low levels of adolescent assertiveness, which represents one aspect of autonomy, during a problem-solving task with their parents were found to be associated with increased concurrent depressive symptomology (Kobak, Cole, Ferenz-Gillies, Fleming & Gamble, 1993). Furthermore, adolescent “autonomy undermining” behaviour during problem-solving interactions with their mother, such as over-personalising a disagreement or recanting an opinion, was found to predict increases in depressive symptomology one year later, even when controlling for baseline symptoms of depression (Allen, Insabell, Porter, Smith, Land & Phillips, 2006). However, differences in the amount of observed adolescent autonomy during a parent-child problem-solving interaction when comparing depressed adolescents with those with externalising difficulties and healthy controls have not been identified (Pavlidis & McCauley, 2001).

Overall, research has shown some consistency in linking a lack of autonomous behaviour and depressive symptoms, yet it has looked at a relatively disparate set of constructs and this is a small body of work. Only one longitudinal study has been conducted, which limits the conclusions that can be drawn about the predisposing and maintaining role of reduced autonomy in depression. More work needs to be done to both define this construct and determine its significance and as most studies focused on adolescent behaviour rather than the dynamics, is it unclear whether the adolescent is responding to parental behaviour, initiating behaviour, or both.

Parent-child role confusion. The concept of enmeshment and role confusion has also been explored in relation to youth depression, which may include spousification, where parents rely on children for intimacy and companionship (Sroufe, Jacobvitz, Mangelsdorf, DeAngelo & Ward, 1985) or parentification, where the child is encouraged to fulfil a parental role by taking on responsibility (Byng-Hall, 2008). Jacobvitz *et al.* (2004) found that more ‘enmeshed’ relationships, which included parents relying on their children for guidance at 24 months were associated with higher levels of teacher-rated, but not mother-rated depressive symptoms at age seven years for girls only. This suggests that girls may be particularly vulnerable to parental attempts to give them inappropriate levels of responsibility. Nevertheless, it was not clear from the study whether the overall amount of this role reversal was higher for girls than boys; it may have been the case that girls were more affected because it occurred more frequently. A longitudinal study also found that children who engaged in observed interactions where parents and children acted in a ‘peer-like’ manner were more likely to report concurrent symptoms of depression, yet this type of interaction was not predictive of symptoms over time when controlling for baseline symptoms and parental depression (Sagrestano *et al.* 2003).

DISCUSSION

This review summarised the evidence investigating the association between observed aspects of parent-child relationships with the onset and maintenance of depression in childhood and adolescence. Although there was much inconsistency in the findings, several aspects of the parent-child interaction emerged as providing relatively consistent evidence in the association with depression. Within the domain of parental factors, it was found that there was more reliable evidence for the effect of low levels of parental positivity on depressive symptoms, which may

suggest that an absence of positive reinforcement is more detrimental to child and adolescent wellbeing than active aversive behaviour. In terms of attachment and development of internal working models, young people may come to believe that parents are unavailable for emotional support and the absence of positive interactions may communicate to young people that they are “unlikelyable.” These beliefs may be central to the development of low self-worth and subsequent depression. The findings on aversive parental behaviour were largely mixed and although the studies investigating maternal disengagement were more consistent, there was a lack of prospective research, limiting the causal inferences that can be made (Branje, Hale, Frijns & Meeus, 2010).

The evidence looking at child and adolescent behaviour during the parent-child interaction and the association with depression found generally clearer evidence for the role of reduced adolescent autonomy. Negotiating appropriate amounts of autonomy across adolescence has been highlighted as a task where difficulties may arise (Hare *et al.* 2014); adolescents who are not encouraged to develop an identity away from the family may be vulnerable to depression. The literature on child and adolescent emotional regulation during parent-child interactions also broadly supported the assumption that interpersonal emotion regulatory difficulties are likely to typify depressed adolescents. However, the specific nature of the disturbance identified varied significantly, with evidence for emotional inhibition, inflexibility and under-control each being linked to depression. This variability could be explained by the family context, developmental stage of the child, or whether parents are likely to reinforce emotional expression or not (Schwartz, Sheeber, Dudgeon & Allan, 2012). Future studies using mixed methods approaches

using both observations of emotional displays and youth self-report of underlying emotions are likely to be helpful to understand the complex processes that occur across parent-child interactions.

Studies investigating parent-child interactive behaviour across the course of the interaction also demonstrated mixed results. Maternal reciprocation of adolescent anger was found to be particularly detrimental for females, while males were more affected by low levels of maternal reciprocation of anger. It is possible that females are more sensitive to mother-child conflict, or that females at high risk of depression experience more conflict (Schwartz *et al.* 2014). Furthermore, although the evidence on the association between positive parental responses to young people's dysphoria was mixed, some studies did find that expressions of adolescent dysphoria were shown to increase positive parental behaviour or decrease parental aggression. This could mean that dysphoria becomes a reinforced behaviour designed to moderate negative parental behaviour in the absence of adaptive conflict resolution strategies, although further evidence is needed to reliably establish this association. In addition, there was some evidence to suggest that incongruent parent-child communication and affect was related to depression, although it is currently unknown as to whether this aspect of the relationship has any predictive relationship with depression.

Several of the identified interaction patterns may be linked to a reduced ability, in the context of depression, to clearly understand others' (and own) internal states. The work on mentalization may be very relevant when interpreting these difficulties in parent-child interactions (Allen, Fonagy & Bateman, 2008). Although no studies to date have specifically examined the relationship between mentalization and youth depression, there is reason to believe

that depression in youth may be associated with reduced capacity for mentalization, which may influence the ability for youth to communicate and interact effectively with their parents.

We expect that highlighting the parent-child factors that are associated with depression will be useful for designing clinical interventions, especially as the translation of research findings into effective clinical interventions for young people with depression is currently limited. It is likely that family environments that maintain depression affect response to treatment, potentially diminishing the beneficial effects of individual evidence-based treatments (Kolko, Brent, Baugher, Bridge & Birmaher, 2000). Observational research could be translated into clinical intervention through in vivo application with families to identify and change the types of interactions that are known to be related to depression, or the development of associated interviews and questionnaires that tap into dimensions that are relevant to this problem. Although this is a common method for infant attachment interventions, it is likely that the benefits could extend to older age groups.

The review identified several methodological limitations of the extant research. Firstly, the research has largely neglected the role of father-child relationship, which may be important for either buffering or exacerbating particular negative mother-child relationships and further studies should investigate the relative contribution of the relationship with each parent. There are also a number of child characteristics that need to be considered further in observational studies, such as child temperament, personality traits, history of depression and neurological/biological factors, which may be influential in parent-child interactions. It is recognised that depression involves a complex range of risk factors and there may be a number of pathways of interacting

factors in the development and maintenance of depression (Garber, 2005). Further work may clarify the extent of the child's contribution to family interactions in the context of depression.

Although this review only included studies using observational methodology, it is clear that there is much variety in the type of task, the affective and behavioural coding systems, participant age, the measurement of depression and the conceptualisation of different parent-child interaction characteristics. Many studies used self-reported measures of internalising symptoms and although these do include depressive symptoms, it would be more rigorous to use diagnostic interviews to determine depressive status. Finally, few studies controlled for co-morbid difficulties such as anxiety disorders or behavioural problems, meaning that the specificity of the parental behaviours described above for contributing solely to depression over other emotional difficulties needs to be established.

Conclusion and Future Directions

The review highlighted that further evidence is needed to clarify the specific mechanisms by which youth depression may develop and be maintained by interactions with their parents, and to identify how to intervene. More focus is also needed on how child characteristics may influence these interactions. Also, as adolescence marks a shift between reliance on parents to peers, studies could investigate how child-peer interactions contribute to depression, but also explore the protective effects of positive relationships with others on negative parent-child relationships and vice versa. The ability of future research to specifically determine which aspects of parent-child relationships predispose and perpetuate depression in childhood and adolescence is likely to be crucial for improving existing clinical interventions to produce better outcomes for future wellbeing of youth and to more effectively support parents and families.

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Table 1

Summary of Observational Parent-Child Interaction Studies.

Study	N*	Age (years)	Design	Observational tasks and coding system	Parent/child variables of interest	Youth depression outcome
Allen et al. (2006)	143	13-14	Longitudinal: T1 and T2 1 year apart	PSI, ARCS coding	Adolescent autonomy undermining behaviour	CDI
Burge & Hammen (1991)	57	8-16	Longitudinal: T1 and T2 6 months apart	5 minute interaction task: conflict discussion, PIS coding	Maternal task involvement and negative/critical feedback	K-SADS
Corona et al. (2005)	111	Mean age = 13	Cross-sectional	PSI, positive and negative codes (no coding system specified)	Maternal criticism	CDI: Short form
Dadds et al. (1992)	73	14-17	Cross-sectional: Depressed (18), conduct disorder (27), mixed conduct disorder and depression (12) and controls (16)	Evening meal, FOS coding	Parent and child positive and adverse behaviours and affect expression	K-SADS: EV
Dietz et al. (2008)	112	8-17	Longitudinal (21-year programme): Depressed (43), high risk (28) and controls (41)	Conflict discussion, FIGCS coding	Maternal disengagement	KSADS:EV
Field et al. (1987)	56	4-8	Cross-sectional: Depressed (20), conduct disorder (18), controls (18)	Freeplay interaction, teaching task, solitary freeplay and child solitary puzzle completion task (no coding system specified)	Maternal responsiveness to child affect	DSM-III diagnosis by psychiatrist, CDI
Gate et al. (2013)	163	12-17	Longitudinal: T1, T2, T3 2 years between time points	IC, PSI, PES, EPI, LIFE coding	Maternal aggressive and positive behaviour and adolescent rumination	K-SADS-PL
Ge et al. (2004)	406	9-20	Longitudinal: T1, T2, T3, T4 one year between time points	Discussion of positive and negative events, coded on 5 point scale ratings	Parental support (responsiveness, communication)	SCL-90

Hamilton et al. (1999)	59	7-14	Cross-sectional: Depressed (21), schizophrenia (18) and controls (20)	PSI, Affective Style and Coping Style coding	Parental criticism	K-SADS-E
Hofer et al. (2013)	131	13-15	Longitudinal: T1 and T2 2 years apart	IC, PSI, affect and verbal coding	Maternal positive affect and anger	CBCL
Hollenstein, Allen and Sheeber (2015)	84	14-18	Cross-sectional: Depressed (24) and controls (60)	EPI, PSI, FCI, LIFE coding	Affective matching between parents and adolescents	K-SADS
Jackson et al. 2011	96	14-16	Cross-sectional: Depressed (43), controls (53)	IC, PSI, LIFE coding	Parental and adolescent angry behaviour	K-SADS, CES-D
Jacob & Johnson (2001)	130	10-18	Cross-sectional	ACQ, PSI, MICS coding	Parental positivity and positivity suppression	CBCL
Jacobvitz et al.(2004)	108	24 months	Longitudinal: T1 and T2 5 years apart	Completing unrelated task whilst providing caregiving, codes derived using rating scales	Maternal disengagement and role confusion	CBCL
Kobak et al (1993)	48	14-18	Cross-sectional	PSI, codes derived using rating scales	Adolescent assertiveness	DDPA
Kuppens et al (2010)	141	Mean age = 16	Cross-sectional: Depressed (72) and controls (69)	EPI, PSI, discussion of family life, LIFE coding	Adolescent emotional inertia, angry, dysphoric, happy behaviour	CES-D
Kuppens et al (2012)	165	9-12	Longitudinal: T1 and T2 2.5 years apart	PSI, EPI, LIFE coding	Adolescent emotional inertia, angry, dysphoric, happy behaviour	K-SADS-PL, CES-D
Lewandowski & Palermo (2009)	30	11-16	Cross-sectional	IC, PSI, EPI, AIRS coding	Adolescent age appropriate independence and responsibility	RCADS
Messer & Gross (1995)	20	8-10	Cross-sectional: High depressive symptoms (10) and low depressive symptoms (10)	Home based observation, codes derived using rating scales	Parent and child positive reciprocal behaviour	CDI
Pavlidis & McCauley (2001)	60	10-17	Cross-sectional: Depressed (20), externalising problems (20) and controls (20)	IC, PSI, ARCS coding	Adolescent autonomy and relatedness	K-SADS, CBCL

Pineda et al. (2007)	72	14-18	Cross sectional: High depressive symptoms (39) and controls (33)	IC, PSI, no coding system specified	Maternal positive behaviour, and adolescent depressive behaviour	CDI
Sagrestano et al. (2003)	275	9-15	Longitudinal: T1 and T2 2 years apart	IC, PSI and unfamiliar board game task, codes derived using rating scales	Parent and child role negotiation	DICA - R
Sanders et al. (1992a)	73	7-14	Cross-sectional: Depressed (30), conduct disorder (27) and controls (16)	IC, PSI, DOS coding	Parent and child angry behaviour	K-SADS, CDI,
Schwartz et al. (2011)	159	11-13	Longitudinal: T1 and T2, 2-3 years apart	IC, PSI, PES, EPI, LIFE coding	Parental aggressive and dysphoric behaviour	K-SADS-PL
Schwartz et al. (2012)	194	10-12	Longitudinal: T1 and T2 2.5 years apart	PSI, PES, EPI, LIFE coding	Parental aggressive, dysphoric and positive behaviour	K-SADS, CES- D, BDI
Schwartz et al. (2014)	113	10-18	Longitudinal: T1, T2, T3, T4 2 years between time points	IC, PSI, PEC, EPI, LIFE coding	Reciprocal maternal and adolescent aggressive, dysphoric and positive behaviour	K-SADS-PL
Sheeber et al. (2000)	50	12-19	Cross sectional: Depressed (25) and controls (25)	IC, PSI, LIFE coding	Parent and adolescent depressive and aggressive reciprocal behaviour.	K-SADS
Sheeber et al. (1998)	494	14-18	Longitudinal: T1 and T2 one year apart Depressed (86) and controls (408)	IC, PSI, LIFE coding	Parent and adolescent depressive and aggressive behaviour	CBCL-D
Sheeber & Sorenson (1998)	52	12-19	Cross-sectional: Depressed (26) and controls (26)	IC, PSI, LIFE coding	Maternal aggressive behaviour	K-SADS
Sheeber et al. (2009)	152	14-18	Cross-sectional: Depressed (75) and controls (77)	Event planning, conflict resolution and best and most difficult memories, LIFE coding	Adolescent angry and dysphoric behaviour	K-SADS, CES- D
Sheeber et al. (2007)	243	14-18	Cross-sectional: Depressed (82), sub-diagnostic depressive symptoms (78) and controls (83)	IC, PSI, LIFE coding	Parental aversive behaviour	K-SADS, CES- D

Sheeber et al. (2012)	141	14-18	Cross-sectional: Depressed (72) and controls (69)	Family activity task, conflict task, reminiscence task, LIFE coding	Adolescent angry and dysphoric behaviour	K-SADS, CES-D
Slesnick & Waldron (1997)	37	14-16	Cross-sectional: Depressed (17) and controls (20)	ACQ, PSI, LIFE coding	Parent and adolescent aversive content and affect, and depressive content and affect	CDISC
Tompson et al (2012)	130	9-16	Cross-sectional	PSI, LIFE coding	Maternal aversive behaviour	CDI
Yap, Allen & Ladouceur (2008)	163	11-13	Cross-sectional	IC, PSI, PEC, EPI, LIFE coding	Maternal and adolescent dysphoric and positive behaviour	CES-D-Revised
Yap et al (2010)	198	10-12	Cross-sectional	IC, PSI, PEC, EPI, LIFE coding	Maternal dysphoric and aversive behaviour, adolescent emotional regulation and aggressive behaviour	CES-D
Yap et al (2011)	163	11-13	Cross-sectional	EPI, PSI, LIFE coding	Maternal and adolescent aversive behaviour	CES-D

*N includes all participants at follow up for longitudinal studies

ACQ = Areas of Change Questionnaire, ARCS = Autonomy and Relatedness Coding System BDI = Beck Depression Inventory, CBCL = Child Behaviour Checklist, CDI = Child Depression Inventory, CDISC = Computerised Diagnostic Interview Schedule for Children, DDPa = Dimensions of Depression Profile for Adolescents, DOS = Depression Observation Schedule, EPI = Event Planning Interaction, FCI = Family Consensus Interaction, FIGCS = Family Interaction Global Coding System, FOS = Family Observation Schedule, IC = Issues Checklist, ISCA = Interview Schedule for Children and Adolescents, K-SADS = Kiddie-Schedule for Affective Disorders and Schizophrenia, K-SADS:EV = Schedule for Affective Disorders and Schizophrenia: Epidemiological Version, K-SADS-PL: Schedule for Affective Disorders and Schizophrenia for School-age Children, Present and Lifetime version, LIFE = Living in Family Environments, MICS = Marital Interaction Coding System, PIS = Peer Interaction System, PES = Pleasant Events Schedule, PS = Problem Solving Interactions, TC = Topics Checklist, VR = Video Recall, YSR = Youth Self Report.